Progress Report
Ground Penetrating Radar Analysis
HWY-308813

March 31, 2009

This progress report covers the period from project initiation (January 20, 2009) through March 31, 2009

Project Kickoff Meeting

A project kickoff meeting was held on Monday, February 2, 2009 at the MTD facility in Helena. The meeting was attended by John Sharkey, Craig Abernathy, John Amostoy, Jon Watson, Milo Borglum, and Greg Zeihen of MTD; Ken Maser of Infrasense; and Jason Puccinelli of Nichols Consulting Engineers. The objectives of the meeting were to review MTD's contracting procedures, to review the project goals and tasks, and to learn more about MDT's GPR program. Minutes of the meeting were prepared by Ken Maser, the Infrasense Project Manager, reviewed by the MTD meeting attendees, and revised by Ken Maser based on the review comments.

Task 1 Activities

1.1 Literature Review:

The literature review has used the following search engines in an effort to find studies, which focus on the subsurface condition assessment of pavements ground penetrating radar.

- Common Internet engines (i.e. google, yahoo)
- Digital Libraries
    - Astm.org
    - Scitation.aip.org
    - Spiedl.aip.org
    - Cat.inist.fr
    - Ntlsearch.bts.gov
    - cflhd.gov
- Infrasense Project Library
- TRB Compendium of Papers (2003-Present)

A number of reference sources have been identified and have been tabulated according to the following:

- Measurement objective and intended application
- Pavement types tested
- Types of GPR equipment used
- Analysis procedures used
- Conclusions and key findings

- Limitations identified

This findings of this review are being summarized and will be included in the Phase I report, along with the supporting data.

1.2 Review of GPR equipment and software

GPR equipment suppliers have been contacted, and information has been requested regarding the latest developments in pavement-related GPR equipment. This information gathering will be completed over the next month, and a summary of the findings will be included in the Phase I report

1.3 Survey of State Highway Agency GPR Practice

The general surveys of State Highway Agencies (SHAs) regarding their experience with GPR have been completed. Ninety-two personnel, representing 48 states (all but Montana—for obvious reasons—and South Dakota—for whom a recent complete report provided the relevant information) were contacted, and the feedback was excellent. In all, responses were obtained from 71 individuals representing 43 of the 48 states. This 90% response rate greatly exceeds typical response rates when surveying SHA practices. Compilation of the agency surveys is underway and a complete summary (along with the individual surveys) will be finalized in the coming month.

Task 2 – Review of MTD's GPR Program

This task was initiated at the kickoff meeting, and a number of suggestions were discussed at that time. Since the kickoff meeting, Infrasense has requested and received sample GPR data sets from MTD, and these are currently being reviewed. Core data corresponding to the GPR data sets was requested in order to assess the accuracy of the MTD equipment and procedures. This type of core data apparently is not available.

Task 3 - The review of Montana's pavement structure and environment.

To document the pavement structure and environment in Montana, the research team interviewed Montana Department of Transportation (MDT) personnel involved with pavement design and management. The interviews were conducted on February 2, 2009 at MDT Headquarters in conjunction with the project kick-off meeting. Those interviewed included:

- Mr. John Amestoy
- Mr. Milo Borglum
- Mr. Dan Hill
- Ms. Mary Gayle Padmos
- Mr. Jon Watson
- Mr. Greg Zeihen

During the interviews, various manuals, memorandums, and guidelines related to pavement data collection, design, and management were obtained. Key elements of the interviews and the information within these documents have been compiled into a report to be included as a section in the Phase I report. Information to be provided in this section will document pavement data collection, design, and management as it relates to GPR and MDT procedures.

Project Schedule:

The due date for the delivery of the Phase I report has been extended from April 1, 2009 to May 1, 2009 to reflect the delay in initiating the project. Based on this revised milestone, the project is currently on schedule.